Welcome to STN International! Enter x:x LOGINID: ssptansc1625 PASSWORD: TERMINAL (ENTER 1, 2, 3, OR ?):2 Welcome to STN International NEWS 1 Web Page for STN Seminar Schedule - N. America WPIDS/WPIX enhanced with new FRAGHITSTR display format NEWS 2 MAR 15 NEWS 3 MAR 16 CASREACT coverage extended NEWS 4 MAR 20 MARPAT now updated daily NEWS 5 MAR 22 LWPI reloaded NEWS 6 MAR 30 RDISCLOSURE reloaded with enhancements APR 02 NEWS 7 JICST-EPLUS removed from database clusters and STN NEWS 8 APR 30 GENBANK reloaded and enhanced with Genome Project ID field NEWS 9 APR 30 CHEMCATS enhanced with 1.2 million new records NEWS 10 APR 30 CA/CAplus enhanced with 1870-1889 U.S. patent records NEWS 11 APR 30 INPADOC replaced by INPADOCDB on STN NEWS 12 MAY 01 New CAS web site launched NEWS 13 MAY 08 CA/CAplus Indian patent publication number format defined NEWS 14 MAY 14 RDISCLOSURE on STN Easy enhanced with new search and display fields NEWS 15 MAY 21 BIOSIS reloaded and enhanced with archival data NEWS 16 MAY 21 TOXCENTER enhanced with BIOSIS reload NEWS 17 MAY 21 CA/CAplus enhanced with additional kind codes for German patents NEWS 18 MAY 22 CA/CAplus enhanced with IPC reclassification in Japanese patents NEWS 19 JUN 27 CA/CAplus enhanced with pre-1967 CAS Registry Numbers NEWS 20 JUN 29 STN Viewer now available NEWS 21 JUN 29 STN Express, Version 8.2, now available NEWS 22 JUL 02 LEMBASE coverage updated NEWS 23 JUL 02 LMEDLINE coverage updated NEWS 24 JUL 02 SCISEARCH enhanced with complete author names NEWS 25 JUL 02 CHEMCATS accession numbers revised NEWS 26 JUL 02 CA/CAplus enhanced with utility model patents from China NEWS 27. JUL 16 CAplus enhanced with French and German abstracts NEWS 28 JUL 18. CA/CAplus patent coverage empanced NEWS 29 JUL 26 USPATFULL/USPAT2 enhanced with IPC reclassification NEWS 30 JUL 30 USGENE now available on STN NEWS EXPRESS 29 JUNE 2007: CURRENT WINDOWS VERSION IS V8.2, CURRENT MACINTOSH VERSION IS V6.0c(ENG) AND V6.0Jc(JP), AND CURRENT DISCOVER FILE IS DATED 05 JULY 2007. **NEWS HOURS** STN Operating Hours Plus Help Desk Availability NEWS LOGIN Welcome Banner and News Items NEWS IPC8

Enter NEWS followed by the item number or name to see news on that

For general information regarding STN implementation of IPC 8

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FILE 'HOME' ENTERED AT 08:36:41 ON 06 AUG 2007

=> logoff h

COST IN U.S. DOLLARS

SINCE FILE TOTAL ENTRY SESSION 0.21 0.21

FULL ESTIMATED COST

SESSION WILL BE HELD FOR 120 MINUTES STN INTERNATIONAL SESSION SUSPENDED AT 08:37:10 ON 06 AUG 2007

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PASSWORD:

* * * * * * RECONNECTED TO STN INTERNATIONAL * * * * * SESSION RESUMED IN FILE 'HOME' AT 08:45:33 ON 06 AUG 2007 FILE 'HOME' ENTERED AT 08:45:33 ON 06 AUG 2007

COST IN U.S. DOLLARS	. SINCE FILE	TOTAL
	ENTRY	SESSION
FULL ESTIMATED COST	0.21	0.21
=> fil reg		
COST IN U.S. DOLLARS	SINCE FILE	TOTAL
	ENTRY	SESSION
FULL ESTIMATED COST	0.42	. 0.42

FILE 'REGISTRY' ENTERED AT 08:45:51 ON 06 AUG 2007 USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT. PLEASE SEE "HELP USAGETERMS" FOR DETAILS. COPYPIGHT (C) 2007 American Chemical Society (ACS)

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STRUCTURE FILE UPDATES: 3 AUG 2007 HIGHEST RN 944028-34-6 DICTIONARY FILE UPDATES: 3 AUG 2007 HIGHEST RN 944028-34-6

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http://www.cas.org/support/stngen/stndoc/properties.html

=> activate b596519/A

L1 STR

L2 2240 SEA FILE=REGISTRY SSS FUL L1

=> d 11

L1 HAS NO ANSWERS

L1 STR

Structure attributes must be viewed using STN Express query preparation.

=> d scan 12

L2 2240 ANSWERS REGISTRY COPYRIGHT 2007 ACS on STN

IN 3-Pyridinol, 2-[[6-[[(3,5-dimethylphenyl)amino]methyl]-2-[[1-[2-(4-morpholinyl)ethyl]-4-piperidinyl]amino]-1H-benzimidazol-1-yl]methyl]-6-methyl- (9CI)

MF C34 H45 N7 O2

PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT

=>

Uploading C:\Program Files\Stnexp\Queries\10596519aaa.str

chain nodes :

10 11 12 13 20 21 22 30 32 33 34

ring nodes :

1 2 3 4 5 6 7 8 9 14 15 16 17 18 19 23 24 25 26 27 28

chain bonds :

 $1 - 30 \quad 4 - 20 \quad 5 - 21 \quad 6 - 22 \quad 8 - 13 \quad 9 - 10 \quad 10 - 11 \quad 10 - 12 \quad 13 - 14 \quad 13 - 32 \quad 14 - 33 \quad 17 - 34$

ring bonds :

1-2 1-6 2-3 2-7 3-4 3-9 4-5 5-6 7-8 8-9 14-15 14-19 15-16 16-17 17-18

18-19 23-24 23-28 24-25 25-26 26-27 27-28

exact/norm bonds :

1-30 2-7 3-9 7-8 8-9 8-13 9-10 13-14 13-32 14-15 14-19 15-16 16-17 17-

18

17-34 18-19

exact bonds :

4-20 5-21 6-22 10-11 10-12 14-33

normalized bonds :

1-2 1-6 2-3 3-4 4-5 5-6 23-24 23-28 24-25 25-26 26-27 27-28

G1:H,Ak

Match level :

1:Atom 2:Atom 3:Atom 4:Atom 5:Atom 6:Atom 7:Atom 8:Atom 9:Atom 10:CLASS

11:CLASS 12:CLASS 13:CLASS 14:Atom 15:Atom 16:Atom 17:Atom 18:Atom 19:Atom

20:CLASS 21:CLASS

22:CLASS 23:Atom 24:Atom 25:Atom 26:Atom 27:Atom 28:Atom 29:Atom 30:CLASS

32:CLASS

33:CLASS 34:CLASS

L3 STRUCTURE UPLOADED

L3 HAS NO ANSWERS STR

* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *

Structure attributes must be viewed using STN Express query preparation.

=> s sss subset=12 sam ENTER LOGIC EXPRESSION, QUERY NAME, OR (END):end SEARCH ENDED BY USER

=> s 13 subset=12 sam SAMPLE SUBSET SEARCH INITIATED 08:48:45 FILE 'REGISTRY' SAMPLE SUBSET SCREEN SEARCH COMPLETED - 119 TO ITERATE

100.0% PROCESSED

119 ITERATIONS

6 ANSWERS

SEARCH TIME: 00.00.01

PROJECTIONS (WITHIN SPECIFIED SUBSET): ONLINE **COMPLETE** PROJECTED ITERATIONS (WITHIN SPECIFIED SUBSET): 1726 TO 3034 PROJECTED ANSWERS (WITHIN SPECIFIED SUBSET): 6 TO 266

L4

6 SEA SUB=L2 SSS SAM L3

=> d scan

6 ANSWERS REGISTRY COPYRIGHT 2007 ACS on STN L4

3-Pyridinol, 6-methyl-2-[[4-methyl-2-[[1-[2-(1-pyrrolidinyl)ethyl]-4-[]]piperidinyl]amino]-1H-benzimidazol-1-yl]methyl]- (9CI) MF C26 H36 N6 O

$$\begin{array}{c|c} \text{Me} & \text{N-CH}_2\text{-CH}_2\text{-N} \\ \hline & \text{N-CH}_2\text{-CH}_2\text{-N} \\ \hline & \text{Me} \\ \end{array}$$

PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT

HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1):0

=> s 13 subset=12 full FULL SUBSET SEARCH INITIATED 08:49:12 FILE 'REGISTRY' FULL SUBSET SCREEN SEARCH COMPLETED -2240 TO ITERATE

100.0% PROCESSED 2240 ITERATIONS

64 ANSWERS

SEARCH TIME: 00.00.01

64 SEA SUB=L2 SSS FUL L3

=> fil caplus

COST IN U.S. DOLLARS

SINCE FILE TOTAL ENTRY SESSION 43.35 43.77

FULL ESTIMATED COST

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FILE COVERS 1907 - 6 Aug 2007 VOL 147 ISS 7 FILE LAST UPDATED: 3 Aug 2007 (20070803/ED)

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=> s 15

L6

11 L5

=> d ibib abs hitstr 1-11

L6 ANSWER 1 OF 11 CAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER:

2006:647626 CAPLUS Full-text

DOCUMENT NUMBER:

145:224185

TITLE:

Cold virus fusion or stopping fusion cold - inhibitors

of the human respiratory syncytial virus F protein

AUTHOR(S):

Del Vecchio, Alfred M.; Sarisky, Robert T.

CORPORATE SOURCE:

Infectious Diseases Research, Centocor, Inc., Radnor,

PA, 19087, USA

SOURCE:

Recent Patents on Anti-Infective Drug Discovery

(2006), 1(2), 247-254

CODEN: RPADCX; ISSN: 1574-891X Bentham Science Publishers Ltd.

PUBLISHER: DOCUMENT TYPE:

Journal; General Review

LANGUAGE:

English

AE A review. Human respiratory syncytial virus (HRSV) is a major respiratory viral pathogen causing moderate to severe upper and lower respiratory tract infections in all ages and across a wide range of patient populations. There are no currently approved vaccines and although a number of candidates are in various stages of development, the challenges are quite substantial. Presently, only a single agent is approved for HRSV prophylaxis, and therapeutic treatment options are severely limited and ineffective, particularly in the infant population. Antibody prophylaxis is restricted to use in populations at high-risk for hospitalization (infants under 35 wk gestational age, infants with chronic lung disease, and infants with congenital heart disease). Aerosol administration of the guanosine analog ribavirin has been approved for the treatment of severe HRSV LRTI in both children and mech. ventilated patients; however, there is still debate over

its overall benefit and the risks associated with its use. Current therapy for those hospitalized due to HRSV is supportive. As such, there is great medical need for the development of agents to prevent and treat $\ensuremath{\mathsf{HRSV}}$ infections in all populations. Interestingly, many of the discovered agents against HRSV, both neutralizing antibodies and small mols. inhibitors, target the viral fusion (F) glycoprotein. In particular, three distinct chemical classes as exemplified by JNJ-2408068, VP-14637, and BMS-433771, which appear to block conformational intermediates of the viral fusion protein are reviewed.

IT 317846-22-3, JNJ-2408068

RL: PAC (Pharmacological activity); PKT (Pharmacokinetics); THU (Therapeutic use); BIOL (Biological study); USES (Uses) (cold virus fusion or stopping fusion cold - inhibitors of human respiratory syncytial virus F protein)

RN 317846-22-3 CAPLUS

3-Pyridinol, 2-[[2-[[1-(2-aminoethyl)-4-piperidinyl]amino]-4-methyl-1H-CN benzimidazol-1-yl]methyl]-6-methyl- (9CI) (CA INDEX NAME)

REFERENCE COUNT: 78 THERE ARE 78 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L6 ANSWER 2 OF 11 CAPLUS COPYRIGHT 2007 ACS on STN ACCESSION NUMBER: 2005:1042075 CAPLUS Full-text

DOCUMENT NUMBER: TITLE:

143:347207

Preparation of RSV replication-inhibiting

benzodiazepine derivatives for use in pharmaceutical compositions in combination with RSV fusion protein

inhibitors

INVENTOR(S): Powell, Kenneth; Kelsey, Richard; Carter, Malcolm;

Dowdell, Verity; Alber, Dagmar; Henderson, Elisa

PATENT ASSIGNEE(S): Arrow Therapeutics Limited, UK

SOURCE:

PCT Int. Appl., 95 pp. CODEN: PIXXD2

DOCUMENT TYPE:

Patent English LANGUAGE:

FAMILY ACC. NUM. COUNT:

PATENT INFORMATION:

PA	TENT	NO.			KIN	D - 1	DATE		APPLICATION NO.						DATE		
WO	2005		. –		A1	A1 20050929							20050318				
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		CN,	co,	CR,	CU,	CZ,	DE,	DK,	DM,	DZ,	EC,	EE,	EG,	ES,	FI,	GB,	GD,
		GE,	GH,	GM,	HR,	HU,	ID,	IL,	IN,	IS,	JP,	KE,	KG,	KP,	KR,	ΚZ,	LC,
		LK,	LR,	LS,	LT,	LU,	LV,	MA,	MD,	MG,	MK,	MN,	MW,	MX,	MZ,	NA,	NI,
		NO,	NZ,	OM,	PG,	PH,	PL,	PΤ,	RO,	RU,	SC,	SD,	SE,	SG,	SK.	SL.	SM.

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SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW
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     AU 2005224159
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                                                                    20050318
     EP 1727551
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                                20061206
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     CN 1933841
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                                            IN 2006-CN3411
                                                                    20060919
PRIORITY APPLN. INFO.:
                                            GB 2004-6279
                                                                 A 20040319
                                            WO 2005-GB1029
                                                                W 20050318
OTHER SOURCE(S):
                         MARPAT 143:347207
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* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *

The invention is related to a pharmaceutical composition comprising pharmaceutically acceptable carrier or diluent and: (a) an inhibitor of the respiratory syncytial virus (RSV) fusion protein of formula I [X = H,(un) substituted alkyl; Y = hetero/aryl, alkyl, alkoxy, etc.; Z = CH2 and derivs.; R1 = H, CONH2 and derivs., CO2H and derivs., (un) substituted alkyl; R2 = H, NH2, alkenyl, etc.; R3 = H, alkenyl, CO2H, etc.; Q = 1,2dihydrobenzotriazol-1-yl, 2,3-dihydroindazol-1-yl, etc.]; and (b) a benzodiazepine derivative of formula II [R1 = alkyl, hetero/aryl; R2 = H, alkyl; each R3 = independently halo, OH, alkyl, alkoxy, NH2, CN, etc.; n = 0-3; R4 = H, alkyl; X = CO, SO, SO2, CONH and derivs.; R5 = (un) substituted hetero/aryl, heterocyclyl] capable of inhibiting RSV replication; the composition provides an additive and synergistic therapeutic effect in treating or preventing an RSV infection. The invention is also related to the preparation of benzodiazepines II. Thus, reacting (S)-3-Amino-5-phenyl-1,3dihydrobenzo[e][1,4]diazepin-2-one with 2-chloro-4-(morpholin-4-yl)benzoic acid gave (S)-III. The fractional inhibitory concentration (FIC) for benzodiazepine III in combination with benzimidazole IV = 0.3, demonstrating a synergistic interaction.

IT 317846-22-3

RL: PAC (Pharmacological activity); THU (Therapeutic use); BIOL (Biological study); USES (Uses)

(preparation of RSV replication-inhibiting benzodiazepine derivs. for use

in

pharmaceutical compos. in combination with RSV fusion protein inhibitors)

RN 317846-22-3 CAPLUS

CN 3-Pyridinol, 2-[[2-[[1-(2-aminoethyl)-4-piperidinyl]amino]-4-methyl-1H-benzimidazol-1-yl]methyl]-6-methyl- (9CI) (CA INDEX NAME)

REFERENCE COUNT:

THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

ANSWER 3 OF 11 CAPLUS COPYRIGHT 2007 ACS on STN ACCESSION NUMBER: 2005:567167 CAPLUS Full-text

DOCUMENT NUMBER:

143:97363

TITLE:

Preparation of piperidine-amino-benzimidazole

derivatives as inhibitors of respiratory syncytial

virus replication

INVENTOR(S):

Bonfanti, Jean-Francois; Andries, Koenraad Jozef Lodewijk; Janssens, Frans Eduard; Sommen, Francois Maria; Guillemont, Jerome Emile Georges; Lacrampe,

Jean Fernand Armand

PATENT ASSIGNEE(S):

Tibotec Pharmaceuticals Ltd., Ire.

SOURCE:

PCT Int. Appl., 54 pp. CODEN: PIXXD2

DOCUMENT TYPE:

Patent

LANGUAGE:

English

FAMILY ACC. NUM. COUNT:

PATENT INFORMATION:

PATENT NO.						KIND DATE					LICAT	DATE						
WO	2005	0588	73		A1 20050630								20041220					
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		CN,	co,	CR,	CU,	CZ,	DE,	DK,	DM,	DZ	, EC,	EE,	EG,	ES,	FI,	GB,	GD.	
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		LK,	LR,	LS,	LT,	LU,	LV,	MA,	MD,	MG	, MK,	MN,	MW,	MX,	MZ.	NA.	NI.	
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US 2007093659					A 1		2007	0426			2006-							
MX 2006PA07109							2006				2006-1					0060		
RIORITY APPLN. INFO.:											2003-1				_	00312		
									-			(. 21	, , , , ,	-10	

OTHER SOURCE(S):

MARPAT 143:97363

Ι

The title compds. I [Q = alkyl optionally substituted with CF3, cycloalkyl, hydroxy, alkoxy, etc.; G = a direct bond or (un)substituted alkanediyl; R1 = Arl or a monocyclic or bicyclic heterocycle; one of R2a and R3a = alkyl and the other one of R2a and R3a = H; in case R2a is different from hydrogen then R2b = H or alkyl, and R3b = H; in case R3a is different from hydrogen then R3b = H or alkyl, and R2b = H; t = 1-3; Arl = (un)substituted Ph; R5 = H, alkyl; and their prodrugs, N-oxides, addition salts, quaternary amines, metal complexes and stereochem. isomeric forms] having inhibitory activity on the replication of the respiratory syncytial virus, were prepared E.g., a multistep synthesis of II, starting from 4,5-dimethylbenzimidazol-2-one, was given. The exemplified compds. I were tested for activity against RSV (data given). The pharmaceutical composition comprising the compound is disclosed.

RL: PAC (Pharmacological activity); RCT (Reactant); SPN (Synthetic preparation); THU (Therapeutic use); BIOL (Biological study); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)

(preparation of 2-(piperidin-4-ylamino)benzimidazoles as inhibitors of respiratory syncytial virus replication)

RN 856705-85-6 CAPLUS

CN

RN

3-Pyridinol, 2-[[2-[[1-(2-hydroxyethyl)-4-piperidinyl]amino]-4-methyl-1H-benzimidazol-1-yl]methyl]-6-methyl- (9CI) (CA INDEX NAME)

856706-12-2 CAPLUS

CN 2-Butanone, 1-[4-[[1-[(3-hydroxy-6-methyl-2-pyridinyl)methyl]-4-methyl-1H-benzimidazol-2-yl]amino]-1-piperidinyl]-3-methyl- (9CI) (CA INDEX NAME)

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856705-79-8P 856705-80-1P 856705-81-2P
IT
     856705-82-3P 856705-84-5P 856705-86-7P
     856705-87-8P 856705-88-9P 856705-89-0P
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     856706-15-5P 856706-16-6P 856706-17-7P
     RL: PAC (Pharmacological activity); SPN (Synthetic preparation); THU
     (Therapeutic use); BIOL (Biological study); PREP (Preparation); USES
     (Uses)
        (preparation of 2-(piperidin-4-ylamino)benzimidazoles as inhibitors of
        respiratory syncytial virus replication)
RN .
     856705-79-8 CAPLUS
     1-Piperidinepropanoic acid, \alpha-amino-4-[[1-[(3-hydroxy-6-methyl-2-
CN
     pyridinyl)methyl]-4-methyl-1H-benzimidazol-2-yl]amino]-, methyl ester,
```

Me
$$CH_2$$
 CH_2 CH_2 CH_2 CH_3 CH_4 CH_5 CH_5 CH_5 CH_6 CH_6

monohydrochloride (9CI) (CA INDEX NAME)

● HCl

RN 856705-80-1 CAPLUS
CN 3-Pyridinol, 6-methyl-2-[[4-methyl-2-[[1-[2-(1-pyrrolidinyl)ethyl]-4-piperidinyl]amino]-1H-benzimidazol-1-yl]methyl]- (9CI) (CA INDEX NAME)

$$\begin{array}{c|c}
Me \\
N \\
N \\
N \\
N \\
CH_2 \\
N \\
Me
\end{array}$$

$$\begin{array}{c}
N \\
CH_2 \\
N \\
Me
\end{array}$$

RN 856705-81-2 CAPLUS .

CN 1-Piperidinepropanesulfonamide, 4-[[1-[(3-hydroxy-6-methyl-2-pyridinyl)methyl]-4-methyl-1H-benzimidazol-2-yl]amino]- (9CI) (CA INDEX NAME)

Me NH NH NH Me
$$(CH_2)_3 - S - NH_2$$

RN 856705-82-3 CAPLUS

CN 1,2-Propanediol, 3-[4-[[1-[(3-hydroxy-6-methyl-2-pyridinyl)methyl]-4-methyl-1H-benzimidazol-2-yl]amino]-1-piperidinyl]- (9CI) (CA INDEX NAME)

RN 856705-84-5 CAPLUS

CN 3-Pyridinol, 2-[[2-[[1-[2-(3,6-dihydro-1(2H)-pyridinyl)ethyl]-4-piperidinyl]amino]-4-methyl-1H-benzimidazol-1-yl]methyl]-6-methyl- (9CI) (CA INDEX NAME)

RN 856705-86-7 CAPLÚS

CN 1-Piperidinepropanoic acid, α -amino-4-[[1-[(3-hydroxy-6-methyl-2-pyridinyl)methyl]-4-methyl-1H-benzimidazol-2-yl]amino]-, monohydrochloride (9CI) (CA INDEX NAME)

Me
$$CH_2$$
 CH_2 CH_2

HC1

RN 856705-87-8 CAPLUS

CN Benzeneacetic acid, 2-[4-[[1-[(3-hydroxy-6-methyl-2-pyridinyl)methyl]-4-methyl-1H-benzimidazol-2-yl]amino]-1-piperidinyl]ethyl ester (9CI) (CA INDEX NAME)

Me
$$CH_2-CH_2-O$$
 CH_2-PH CH_2-CH_2-O CH_2-PH CH_2-CH_2-O CH_2-PH CH_2-CH_2-O CH_2-PH

RN 856705-88-9 CAPLUS

CN 3-Pyridinol, 2-[[2-[[1-[2-(hexahydro-1H-azepin-1-yl)ethyl]-4-piperidinyl]amino]-4-methyl-1H-benzimidazol-1-yl]methyl]-6-methyl- (9CI) (CA INDEX NAME)

RN 856705-89-0 CAPLUS

CN 3-Pyridinol, 2-[[2-[[1-[2-(2,5-dihydro-1H-pyrrol-1-yl)ethyl]-4-

piperidinyl]amino]-4-methyl-1H-benzimidazol-1-yl]methyl]-6-methyl- (9CI)
(CA INDEX NAME)

RN 856705-90-3 CAPLUS

CN 1-Piperidinepropanamide, 4-[[1-[(3-hydroxy-6-methyl-2-pyridinyl)methyl]-4-methyl-1H-benzimidazol-2-yl]amino]- (9CI) (CA INDEX NAME)

RN 856705-91-4 CAPLUS

CN 1-Piperidinepropanesulfonamide, 4-[[1-[(3-hydroxy-6-methyl-2-pyridinyl)methyl]-4-methyl-1H-benzimidazol-2-yl]amino]-N-methyl- (9CI) (CA INDEX NAME)

RN 856705-92-5 CAPLUS

CN 3-Pyridinol, 2-[[2-[[1-[1-(hydroxymethyl)propyl]-4-piperidinyl]amino]-4-methyl-1H-benzimidazol-1-yl]methyl]-6-methyl- (9CI) (CA INDEX NAME)

RN 856705-93-6 CAPLUS

CN 1-Piperidineacetic acid, 4-[[1-[(3-hydroxy-6-methyl-2-pyridinyl)methyl]-4-methyl-1H-benzimidazol-2-yl]amino]-, monohydrochloride (9CI) (CA INDEX NAME)

HCl

RN 856705-94-7 CAPLUS

CN 1-Piperidinepentanamide, 4-[[1-[(3-hydroxy-6-methyl-2-pyridinyl)methyl]-4-methyl-1H-benzimidazol-2-yl]amino]- (9CI) (CA INDEX NAME)

Me NH NH (CH2)
$$4 - C - NH2$$

$$CH_2 N Me$$

$$HO$$

RN 856705-95-8 CAPLUS

CN 1-Piperidinepropanoic acid, 4-[[1-[(3-hydroxy-6-methyl-2-pyridinyl)methyl]-4-methyl-1H-benzimidazol-2-yl]amino]-, ethyl ester (9CI) (CA INDEX NAME)

RN 856705-96-9 CAPLUS

CN 1-Piperidinepropanoic acid, 4-[[1-[(3-hydroxy-6-methyl-2-pyridinyl)methyl]-4-methyl-1H-benzimidazol-2-yl]amino]-, monohydrochloride (9CI) (CA INDEX NAME)

HCl

RN 856705-97-0 CAPLUS

CN 3-Pyridinol, 6-methyl-2-[[4-methyl-2-[(1-methyl-4-piperidinyl)amino]-1H-benzimidazol-1-yl]methyl]- (9CI) (CA INDEX NAME)

RN 856705-98-1 CAPLUS

CN 3-Pyridinol, 2-[[2-[[1-(2-hydroxy-3-methylbutyl)-4-piperidinyl]amino]-4-methyl-1H-benzimidazol-1-yl]methyl]-6-methyl- (9CI) (CA INDEX NAME)

RN 856705-99-2 CAPLUS

CN Benzenesulfonamide, 4-[3-[4-[[1-[(3-hydroxy-6-methyl-2-pyridinyl)methyl]-4-methyl-1H-benzimidazol-2-yl]amino]-1-piperidinyl]propoxy]- (9CI) (CA INDEX NAME)

RN 856706-00-8 CAPLUS

CN 3-Pyridinol, 2-[[2-[[1-[2-[(aminocarbonyl)oxy]ethyl]-4-piperidinyl]amino]-4-methyl-1H-benzimidazol-1-yl]methyl]-6-methyl- (9CI) (CA INDEX NAME)

RN 856706-01-9 CAPLUS

CN 3-Pyridinol, 2-[[2-[[1-[2-(1H-imidazol-1-yl)ethyl]-4-piperidinyl]amino]-4-methyl-1H-benzimidazol-1-yl]methyl]-6-methyl- (9CI) (CA INDEX NAME)

RN 856706-02-0 CAPLUS

CN 3-Pyridinol, 2-[[2-[[1-(2-hydroxy-2-phenylethyl)-4-piperidinyl]amino]-4-methyl-1H-benzimidazol-1-yl]methyl]-6-methyl- (9CI) (CA INDEX NAME)

RN 856706-03-1 CAPLUS

CN 2-Butanone, 1-[4-[[1-[(3-hydroxy-6-methyl-2-pyridinyl)methyl]-4-methyl-1H-benzimidazol-2-yl]amino]-1-piperidinyl]-3,3-dimethyl- (9CI) (CA INDEX NAME)

RN 856706-04-2 CAPLUS

CN 3-Pyridinol, 2-[[2-[[1-[2-hydroxy-3-(4-methoxyphenoxy)propyl]-4-piperidinyl]amino]-4-methyl-1H-benzimidazol-1-yl]methyl]-6-methyl- (9CI) (CA INDEX NAME)

RN 856706-05-3 CAPLUS

CN 3-Pyridinol, 2-[[2-[[1-[3-(3-fluorophenoxy)-2-hydroxypropyl]-4-piperidinyl]amino]-4-methyl-1H-benzimidazol-1-yl]methyl]-6-methyl- (9CI) (CA INDEX NAME)

RN 856706-06-4 CAPLUS

CN 3-Pyridinol, 2-[[2-[[1-(2-hydroxy-3-phenoxypropyl)-4-piperidinyl]amino]-4-methyl-1H-benzimidazol-1-yl]methyl]-6-methyl- (9CI) (CA INDEX NAME)

RN 856706-07-5 CAPLUS

CN 1-Piperidineacetamide, 4-[[1-[(3-hydroxy-6-methyl-2-pyridinyl)methyl]-4-methyl-1H-benzimidazol-2-yl]amino]- (9CI) (CA INDEX NAME)

RN 856706-08-6 CAPLUS

CN 3-Pyridinol, 2-[[2-[[1-(2-hydroxy-3-phenylpropyl)-4-piperidinyl]amino]-4-methyl-1H-benzimidazol-1-yl]methyl]-6-methyl- (9CI) (CA INDEX NAME)

RN 856706-09-7 CAPLUS

CN 3-Pyridinol, 6-methyl-2-[[4-methyl-2-[[1-[2-(4H-1,2,4-triazol-4-yl)ethyl]-4-piperidinyl]amino]-1H-benzimidazol-1-yl]methyl]- (9CI) (CA INDEX NAME)

RN 856706-10-0 CAPLUS

CN Benzoic acid, 4-[3-[4-[[1-[(3-hydroxy-6-methyl-2-pyridinyl)methyl]-4-methyl-1H-benzimidazol-2-yl]amino]-1-piperidinyl]propoxy]-, ethyl ester (9CI) (CA INDEX NAME)

RN 856706-11-1 CAPLUS

CN 3-Pyridinol, 6-methyl-2-[[4-methyl-2-[[1-(3-methylbutyl)-4-piperidinyl]amino]-1H-benzimidazol-1-yl]methyl]- (9CI) (CA INDEX NAME)

RN 856706-13-3 CAPLUS

CN 3-Pyridinol, 2-[[2-[[1-(2-hydroxy-3,3-dimethylbutyl)-4-piperidinyl]amino]-4-methyl-1H-benzimidazol-1-yl]methyl]-6-methyl- (9CI) (CA INDEX NAME)

RN 856706-14-4 CAPLUS

CN Acetic acid, [2-[4-[[1-[(3-hydroxy-6-methyl-2-pyridinyl)methyl]-4-methyl-1H-benzimidazol-2-yl]amino]-1-piperidinyl]ethoxy]-, methyl ester (9CI) (CA INDEX NAME)

Me
$$NH$$
 NH Me NH Me NH Me

RN 856706-15-5 CAPLUS

CN Benzoic acid, 3-[3-[4-[[1-[(3-hydroxy-6-methyl-2-pyridinyl)methyl]-4-methyl-1H-benzimidazol-2-yl]amino]-1-piperidinyl]propoxy]-, ethyl ester (9CI) (CA INDEX NAME)

RN 856706-16-6 CAPLUS

CN 1-Piperidineacetic acid, 4-[[1-[(3-hydroxy-6-methyl-2-pyridinyl)methyl]-4-methyl-1H-benzimidazol-2-yl]amino]-, ethyl ester (9CI) (CA INDEX NAME)

RN 856706-17-7 CAPLUS

CN 3-Pyridinol, 2-[[2-[[1-[(1-hydroxycyclohexyl)methyl]-4-piperidinyl]amino]-4-methyl-1H-benzimidazol-1-yl]methyl]-6-methyl- (9CI) (CA INDEX NAME)

IT 856706-34-8

RL: RCT (Reactant); RACT (Reactant or reagent)
 (preparation of 2-(piperidin-4-ylamino)benzimidazoles as inhibitors of
 respiratory syncytial virus replication)

RN 856706-34-8 CAPLUS

CN 1-Piperidinecarboxylic acid, 4-[[1-[(3-hydroxy-6-methyl-2-pyridinyl)methyl]-4-methyl-1H-benzimidazol-2-yl]amino]-, ethyl ester (9CI) (CA INDEX NAME)

IT 856706-26-8P 856706-27-9P 856706-29-1P 856706-30-4P 856706-31-5P 856706-32-6P

856706-33-7P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT

(Reactant or reagent)

(preparation of 2-(piperidin-4-ylamino)benzimidazoles as inhibitors of respiratory syncytial virus replication)

RN 856706-26-8 CAPLUS

CN 1-Piperidinepropanoic acid, $\alpha-[[(1,1-\text{dimethylethoxy})\,\text{carbonyl}]\,\text{amino}]-4-[[1-[(3-\text{hydroxy}-6-\text{methyl}-2-\text{pyridinyl})\,\text{methyl}]-4-\text{methyl}-1\text{H-benzimidazol}-2-yl]\,\text{amino}]-, methyl ester (9CI) (CA INDEX NAME)$

RN 856706-27-9 CAPLUS

CN 1-Piperidinecarboxylic acid, 4-[[4-methyl-1-[[6-methyl-3-(phenylmethoxy)-2-pyridinyl]methyl]-lH-benzimidazol-2-yl]amino]-, ethyl ester (9CI) (CA INDEX NAME)

RN 856706-29-1 CAPLUS

CN 1-Piperidineacetic acid, 4-[[4-methyl-1-[[6-methyl-3-(phenylmethoxy)-2-pyridinyl]methyl]-1H-benzimidazol-2-yl]amino]-, ethyl ester (9CI) (CA INDEX NAME)

RN 856706-30-4 CAPLUS

CN 1-Piperidineethanol, 4-[[4-methyl-1-[[6-methyl-3-(phenylmethoxy)-2-pyridinyl]methyl]-1H-benzimidazol-2-yl]amino]- (9CI) (CA INDEX NAME)

RN 856706-31-5 CAPLUS

CN 3-Pyridinol, 2-[[2-[[1-(2-chloroethyl)-4-piperidinyl]amino]-4-methyl-1H-benzimidazol-1-yl]methyl]-6-methyl- (9CI) (CA INDEX NAME)

RN 856706-32-6 CAPLUS

CN Benzeneacetic acid, 2-[4-[[4-methyl-1-[[6-methyl-3-(phenylmethoxy)-2-pyridinyl]methyl]-1H-benzimidazol-2-yl]amino]-1-piperidinyl]ethyl ester (9CI) (CA INDEX NAME)

Me
$$CH_2-CH_2-O-C-CH_2-Ph$$
 $CH_2-CH_2-O-C-CH_2-Ph$
 $CH_2-CH_2-O-C-CH_2-Ph$
 $CH_2-CH_2-O-C-CH_2-Ph$

Ex

RN 856706-33-7 CAPLUS

CN 1-Piperidineethanol, 4-[[4-methyl-1-[[6-methyl-3-(phenylmethoxy)-2-pyridinyl]methyl]-1H-benzimidazol-2-yl]amino]-, carbamate (ester) (9CI) (CA INDEX NAME)

Me
$$CH_2-CH_2-O-C-NH_2$$
 $CH_2-CH_2-O-C-NH_2$
 $CH_2-CH_2-O-C-NH_2$
 $CH_2-CH_2-O-C-NH_2$

REFERENCE COUNT:

6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L6 ANSWER 4 OF 11 CAPLUS COPYRIGHT 2007 ACS on STN ACCESSION NUMBER: 2005:564655 CAPLUS Full-text

DOCUMENT NUMBER:

143:97374

TITLE:

Preparation of morpholine containing benzimidazoles as inhibitors of respiratory syncytial virus replication

INVENTOR(S):

Bonfanti, Jean-Francois; Andries, Koenraad Jozef Lodewijk; Fortin, Jerome Michel Claude; Muller, Philippe; Doublet, Frederic Marc Maurice; Meyer, Christophe; Willebrords, Rudy Edmond; Gevers, Tom Valerius Josepha; Timmerman, Philip Maria Martha Bern

PATENT ASSIGNEE(S):

SOURCE:

Tibotec Pharmaceuticals Ltd., Ire.

PCT Int. Appl., 144 pp. CODEN: PIXXD2

DOCUMENT TYPE:

Patent

LANGUAGE:

English

FAMILY ACC. NUM. COUNT:

PATENT INFORMATION:

PA	TENT	NO.			KIND DAT				,	APPL	ICAT	DATE						
WO	2005	0588	 71		A1 20050630				,	WO 2004-EP53620						20041220		
	W:	ΑE,	AG,	AL,	AM,	AT,	AU,	AZ,	BA,	BB,	BG,	BR,	BW,	BY,	BZ,	CA,	CH,	
		CN,	co,	CR,	CU,	CZ,	DE,	DK,	DM,	DZ,	EC,	EE,	EG,	ES,	FI,	GB,	GD.	
		GE,	GH,	GM,	HR,	HU,	ID,	IL,	ΙN,	IS,	JP,	KE,	KG,	KP,	KR,	KZ,	LC.	
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		NO,	NZ,	OM,	PG,	PH,	PL,	PT,	RO,	RU,	SC,	SD,	SE,	SG,	SK,	SL,	SY.	

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         RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM,
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     AU 2004298460
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     EP 1697345
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                                                                     20041220
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             IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, PL, SK,
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                                                                     20060104
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                                 20060823
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     NO 2006003322
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                                             NO 2006-3322
                                                                     20060718
PRIORITY APPLN. INFO.:
                                             EP 2003-104810
                                                                     20031218
                                             US 2004-567182P
                                                                     20040430
                                                                  Ρ
                                             EP 2004-105312
                                                                  Α
                                                                     20041026
                                             WO 2004-EP53620
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                                                                     20041220
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OTHER SOURCE(S):

MARPAT 143:97374

GI

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AΒ The title compds. I [G = a direct bond or (un) substituted alkanediyl; R1 = Ar1 or a monocyclic or bicyclic heterocycle; Q = R7, pyrrolidinyl substituted with R7, piperidinyl substituted with R7 or homopiperidinyl substituted with R7; one of R2a and R3a = halo, optionally mono- or polysubstituted alkyl, optionally mono- or polysubstituted alkenyl, nitro, hydroxy, etc.; and the other one of R2a and R3a = H; in case R2a is different from H atom then R2b = H, alkyl or halogen and R3b = H; in case R3a is different from H atom then R3b= H, alkyl or halogen and R2b = H; R5 = H, alkyl; Ar1 = (un)substituted Ph; R7 = alkyl substituted with heterocycle or alkyl substituted with both a radical OR8 and a heterocycle; R8 = H, alkyl, Arlalkyl; or a prodrug, N-oxide, addition salt, quaternary amine, metal complex or stereochem. isomeric form thereof] having inhibitory activity on the replication of the respiratory syncytial virus, were prepared E.g., a multi-step synthesis of II, starting from Et 3,4-diaminobenzoate, was given. The compds. I were tested for

activity against RSV (data given). The pharmaceutical composition comprising the compound I is disclosed.

IT 857068-52-1P ·

> RL: PAC (Pharmacological activity); SPN (Synthetic preparation); THU (Therapeutic use); BIOL (Biological study); PREP (Preparation); USES

(preparation of morpholine containing benzimidazoles as inhibitors of respiratory syncytial virus replication)

RN 857068-52-1 CAPLUS

3-Pyridinol, 6-methyl-2-[[4-methyl-2-[[1-[2-(4-morpholinyl)ethyl]-4-CN piperidinyl]amino]-1H-benzimidazol-1-yl]methyl]- (9CI) (CA INDEX NAME)

REFERENCE COUNT:

THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

ANSWER 5 OF 11 CAPLUS COPYRIGHT 2007 ACS on STN L6

ACCESSION NUMBER:

2005:494325 CAPLUS Full-text 143:90328

DOCUMENT NUMBER: TITLE:

Small molecules VP-14637 and JNJ-2408068 inhibit

respiratory syncytial virus fusion by similar

mechanisms

AUTHOR(S):

Douglas, Janet L.; Panis, Marites L.; Ho, Edmund; Lin, Kuei-Ying; Krawczyk, Steve H.; Grant, Deborah M.; Cai, Ruby; Swaminathan, Swami; Chen, Xiaowu; Cihlar, Tomas

CORPORATE SOURCE:

SOURCE:

PUBLISHER:

Gilead, Foster City, CA, 94404, USA

Antimicrobial Agents and Chemotherapy (2005), 49(6),

2460-2466

CODEN: AMACCQ; ISSN: 0066-4804

DOCUMENT TYPE:

American Society for Microbiology Journal

LANGUAGE:

English

AB Here we present data on the mechanism of action of VP-14637 and JNJ-2408068(formerly R-170591), two small-mol. inhibitors of respiratory syncytial virus (RSV). Both inhibitors exhibited potent antiviral activity with 50% effective concns. (EC50s) of 1.4 and 2.1 nM, resp. A similar inhibitory effect was observed in a RSV-mediated cell fusion assay (EC50 = 5.4 and 0.9 nM, resp.). Several drug-resistant RSV variants were selected in vitro in the presence of each compound All selected viruses exhibited significant cross-resistance to both inhibitors and contained various single amino acid substitutions in two distinct regions of the viral F protein, the heptad repeat 2 (HR2; mutations D486N, E487D, and F488Y), and the intervening domain between HR1 and HR2 (mutation K399I and T400A). Studies using [3H]VP-14637 revealed a specific binding of the compound to RSV-infected cells that was efficiently inhibited by JNJ-2408068 (50% inhibitory concentration = 2.9 nM) but not by the HR2derived peptide T-118. Further anal. using a transient T7 vaccinia expression system indicated that RSV F protein is sufficient for this interaction. F proteins containing either the VP-14637 or JNJ-2408068 resistance mutations exhibited greatly reduced binding of [3H]VP-14637. Mol. modeling anal.

suggests that both mols. may bind into a small hydrophobic cavity in the inner core of F protein, interacting simultaneously with both the HR1 and HR2 domains. Altogether, these data indicate that VP-14637 and JNJ-2408068 interfere with RSV fusion through a mechanism involving a similar interaction with the F protein.

IT 317846-22-3, JNJ-2408068

> RL: PAC (Pharmacological activity); THU (Therapeutic use); BIOL (Biological study); USES (Uses)

(small mols. VP-14637 and JNJ-2408068 inhibit respiratory syncytial virus fusion by similar mechanisms by binding into a small hydrophobic cavity in the inner core of F protein, interacting simultaneously with both the HR1 and HR2 domains)

317846-22-3 CAPLUS RN

3-Pyridinol, 2-[[2-[[1-(2-aminoethyl)-4-piperidinyl]amino]-4-methyl-1H-CN benzimidazol-1-yl]methyl]-6-methyl- (9CI) (CA INDEX NAME)

REFERENCE COUNT:

25 THERE ARE 25 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

ANSWER 6 OF 11 CAPLUS COPYRIGHT 2007 ACS on STN L6

ACCESSION NUMBER:

2003:923920 CAPLUS Full-text

DOCUMENT NUMBER:

140:246197

TITLE:

Short duration aerosols of JNJ 2408068 (R170591) administered prophylactically or therapeutically protect cotton rats from experimental respiratory

syncytial virus infection

AUTHOR(S):

Wyde, Philip R.; Chetty, Srikrishna N.; Timmerman,

Philip; Gilbert, Brian E.; Andries, Koen

CORPORATE SOURCE:

Department of Molecular Virology and Microbiology,

Baylor College of Medicine, Houston, TX, 77030, USA

Antiviral Research (2003), 60(3), 221-231

CODEN: ARSRDR; ISSN: 0166-3542

PUBLISHER:

SOURCE:

Elsevier Science B.V.

DOCUMENT TYPE:

... Journal

English

LANGUAGE:

Cotton rats exposed to continuous small droplet aerosols of 2[[2-[[1-(2aminoethyl)-4-piperidinyl]amino]-4-methyl-1H-benzimidazol-1- yl]methyl]-6methyl-3-pyridinol (JNJ 2408068) or its hydrochloric salt for only 15 min, one day prior to virus inoculation or one day after, were significantly protected from pulmonary respiratory syncytial virus (RSV) infection compared to control animals similarly infected but exposed to aerosols of placebo at these times. No evidence of toxicity was seen in any of these animals or in cotton rats administered 10 times the min. cotton rat efficacious dose (i.e. 10+0.39 mg of active compound per kg of body weight) for four continuous days. The marked selective antiviral activity observed in the cotton rats mirrored that seen for these compds. in cytotoxicity and antiviral assays performed against RSV

in vitro. Plasma kinetics and tissue distribution of JNJ 2408068 in cotton rats following inhalation were determined in sep. expts. performed using conditions similar to those utilized in the in vivo efficacy studies. The data from these expts. indicated that significant levels of the test compound were delivered to the lungs of exposed animals, but that extrapulmonary distribution was limited.

IT 317846-22-3, JNJ 2408068

RL: ADV (Adverse effect, including toxicity); PAC (Pharmacological activity); PKT (Pharmacokinetics); THU (Therapeutic use); BIOL (Biological study); USES (Uses)

(short duration aerosols of JNJ 2408068 (R170591) administered prophylactically or therapeutically protect cotton rats from exptl. respiratory syncytial virus infection)

RN 317846-22-3 CAPLUS

CN 3-Pyridinol, 2-[[2-[[1-(2-aminoethyl)-4-piperidinyl]amino]-4-methyl-1H-benzimidazol-1-yl]methyl]-6-methyl- (9CI) (CA INDEX NAME)

IT 669772-70-7

RL: PAC (Pharmacological activity); THU (Therapeutic use); BIOL (Biological study); USES (Uses)

(short duration aerosols of JNJ 2408068 (R170591) administered prophylactically or therapeutically protect cotton rats from exptl. respiratory syncytial virus infection)

RN 669772-70-7 CAPLUS

CN 3-Pyridinol, 2-[[2-[[1-(2-aminoethyl)-4-piperidinyl]amino]-4-methyl-1H-benzimidazol-1-yl]methyl]-6-methyl-, monohydrochloride (9CI) (CA INDEX NAME)

● HCl

L6 ANSWER 7 OF 11 CAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2003:923919 CAPLUS Full-text DOCUMENT NUMBER: 140:296902

TITLE: Substituted benzimidazoles with nanomolar activity

against respiratory syncytial virus

AUTHOR(S): Andries, Koen; Moeremans, Marc; Gevers, Tom;

Willebrords, Rudy; Sommen, Cois; Lacrampe, Jean;

Janssens, Frans; Wyde, Philip R.

CORPORATE SOURCE: Johnson and Johnson Pharmaceutical Research and

Development, Beerse, Belg..

SOURCE: Antiviral Research (2003), 60(3), 209-219

CODEN: ARSRDR; ISSN: 0166-3542

PUBLISHER: Elsevier Science B.V.

DOCUMENT TYPE: Journal LANGUAGE: English

A cell-based assay was used to discover compds. inhibiting respiratory AB syncytial virus (RSV)-induced fusion in HeLa/M cells. A lead compound was identified and subsequent synthesis of >300 analogs led to the identification of JNJ 2408068 (R170591), a low mol. weight (MW 395) benzimidazole derivative with an EC50 (0.16 nM) against some laboratory strains almost 100,000 times better than that of ribavirin (15 μM). Antiviral activity was confirmed for subgroup A and B clin. isolates of human RSV and for a bovine RSV isolate. The compound did not inhibit the growth of representative viruses from other Paramyxovirus genera, i.e. HPIV2 and Mumps Virus (genus Rubulavirus), HPIV3 (genus Respirovirus), Measles virus (genus Morbillivirus) and hMPV. Efficacy in cytopathic effect inhibition assays correlated well with efficacy in virus yield reduction assays. A concentration of 10 nM reduced RSV production 1000fold in multi-cycle expts., irresp. of the multiplicity of infection. Time of addition studies pointed to a dual mode of action: inhibition of virus-cell fusion early in the infection cycle and inhibition of cell-cell fusion at the end of the replication cycle. Two resistant mutants were raised and shown to have single point mutations in the F-gene (S398L and D486N). JNJ 2408068 was also shown to inhibit the release of proinflammatory cytokines IL-6, IL-8 and Rantes from RSV-infected A549 cells.

IT 317846-22-3, JNJ 2408068

RL: DMA (Drug mechanism of action); PAC (Pharmacological activity); THU (Therapeutic use); BIOL (Biological study); USES (Uses)

(substituted benzimidazoles with nanomolar activity against respiratory syncytial virus)

RN 317846-22-3 CAPLUS

CN 3-Pyridinol, 2-[[2-[[1-(2-aminoethyl)-4-piperidinyl]amino]-4-methyl-1H-benzimidazol-1-yl]methyl]-6-methyl- (9CI) (CA INDEX NAME)

REFERENCE COUNT: 23 THERE ARE 23 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L6 ANSWER 8 OF 11 CAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2003:742431 CAPLUS Full-text

DOCUMENT NUMBER: 140:192261

TITLE: Comparison of the inhibition of human metapneumovirus

and respiratory syncytial virus by ribavirin and

immune serum globulin in vitro

AUTHOR(S): Wyde, Philip R.; Chetty, Srikrishna N.; Jewell, Alan

M.; Boivin, Guy; Piedra, Pedro A.

CORPORATE SOURCE: Departments of Molecular Virology and Microbiology,

Baylor College of Medicine, Houston, TX, 77030, USA

SOURCE: Antiviral Research (2003), 60(1), 51-59

CODEN: ARSRDR; ISSN: 0166-3542

PUBLISHER: Elsevier Science B.V.

DOCUMENT TYPE: Journal LANGUAGE: English

AB Human metapneumovirus (hMPV) is a newly recognized pathogen that like its better-known relative, human respiratory syncytial virus (hRSV), appears to be ubiquitous and an important cause of respiratory disease in diverse subpopulations. No antivirals or vaccines are currently approved for the treatment or prevention of hMPV infections. However, ribavirin is licensed to treat serious hRSV-induced infections in children and immune globulin designed for i.v. administration (IVIG) and palivizumab (Synagis), a humanized monoclonal antibody preparation, have been utilized as alternatives to vaccines for preventing or reducing the severity of infections caused by this virus. Because both ribavirin and IVIG have broad viral specificities, studies were performed to compare the ability of these two agents to inhibit the replication of hRSV and hMPV in tissue culture-based assays. Two exptl. chemotherapeutic agents (i.e. VP14637 and JNJ2408068) and different antibody prepns. were included in this testing for comparison. Ribavirin and the IVIG utilized were found to have equivalent antiviral activity against hMPV and hRSV. In contrast, except for antisera specifically raised against hMPV, all of the other materials tested had marked activity only against hRSV.

IT 317846-22-3, JNJ 2408068

RL: PAC (Pharmacological activity); THU (Therapeutic use); BIOL (Biological study); USES (Uses)

(inhibition of human metapneumovirus vs. respiratory syncytial virus by ribavirin and immune serum globulin in vitro)

RN 317846-22-3 CAPLUS

CN 3-Pyridinol, 2-[[2-[[1-(2-aminoethyl)-4-piperidinyl]amino]-4-methyl-1H-benzimidazol-1-yl]methyl]-6-methyl- (9CI) (CA INDEX NAME)

REFERENCE COUNT: 45 THERE ARE 45 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L6 ANSWER 9 OF 11 CAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER:

2003:495542 CAPLUS Full-text

DOCUMENT NUMBER:

140:56326

TITLE:

AUTHOR(S):

Structural characterization of respiratory syncytial virus fusion inhibitor escape mutants: homology model

of the F protein and a syncytium formation assay

Morton, Craig J.; Cameron, Rachel; Lawrence, Lynne J.;

Lin, Bo; Lowe, Melinda; Luttick, Angela; Mason,

Anthony; McKimm-Breschkin, Jenny; Parker, Michael W.; Ryan, Jane; Smout, Michael; Sullivan, Jayne; Tucker.

Simon P.; Young, Paul R.

CORPORATE SOURCE:

Biota Holdings Limited, Victoria, 3004, Australia

SOURCE:

Virology (2003), 311(2), 275-288

CODEN: VIRLAX; ISSN: 0042-6822

PUBLISHER:

Elsevier Science

DOCUMENT TYPE:

Journal

LANGUAGE:

English

Respiratory syncytial virus (RSV) is a ubiquitous human pathogen and the leading cause of lower respiratory tract infections in infants. Infection of cells and subsequent formation of syncytia occur through membrane fusion mediated by the RSV fusion protein (RSV-F). A novel in vitro assay of recombinant RSV-F function has been devised and used to characterize a number of escape mutants for three known inhibitors of RSV-F that have been isolated. Homol. modeling of the RSV-F structure has been carried out on the basis of a chimera derived from the crystal structures of the RSV-F core and a fragment from the orthologous fusion protein from Newcastle disease virus (NDV). The structure correlates well with the appearance of RSV-F in electron micrographs, and the residues identified as contributing to specific binding sites for several monoclonal antibodies are arranged in appropriate solventaccessible clusters. The positions of the characterized resistance mutants in the model structure identify two promising regions for the design of fusion inhibitors.

IT 317846-22-3, R 170591

> RL: BSU (Biological study, unclassified); PAC (Pharmacological activity); THU (Therapeutic use); BIOL (Biological study); USES (Uses)

(homol. model of F protein of respiratory syncytial virus fusion inhibitor escape mutants and a syncytium formation assay)

RN 317846-22-3 CAPLUS

3-Pyridinol, 2-[[2-[[1-(2-aminoethyl)-4-piperidinyl]amino]-4-methyl-1H-CN benzimidazol-1-yl]methyl]-6-methyl- (9CI) (CA INDEX NAME)

REFERENCE COUNT:

THERE ARE 38 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L6 CAPLUS COPYRIGHT 2007 ACS on STN ANSWER 10 OF 11 ACCESSION NUMBER: 2003:376893 CAPLUS Full-text

38

DOCUMENT NUMBER: 138:379184 TITLE:

Method for identifying or screening anti-viral agents against respiratory syncytial virus (RSV) using a

three-dimensional model of the RSV-F protein

INVENTOR(S):

Morton, Craig James; Parker, Michael William; Ryan,

Jane

PATENT ASSIGNEE(S):

Biota Holdings Ltd., Australia

SOURCE:

PCT Int. Appl., 224 pp.

CODEN: PIXXD2

DOCUMENT TYPE:

Patent

LANGUAGE:

English

FAMILY ACC. NUM. COUNT:

1

PATENT INFORMATION:

PA	PATENT NO.						DATE		APPLICATION NO.						DATE		
WO	2003	0401	 78		A1	_	2003		1	 WO 2	 002-	AU15	 22			 0021	
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		GM,	HR,	HU,	ID,	IL,	IN,	IS,	JP,	KE,	KG,	KP,	KR,	KZ,	LC.	LK.	LR.
		LS,	LT,	LU,	LV,	MA,	MD,	MG,	MK,	MN,	MW,	MX,	MZ,	NO,	NZ.	OM.	PH.
		PL,	PT,	RO,	RU,	SC,	SD,	SE,	SG,	SI,	SK,	SL,	ТJ,	TM,	TN.	TR.	TT.
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AU	AU 2002340630						2003	0519	Ž	AU 20	002-3	3406	30		20021108		
US		A 1		2005	1006	τ	JS 20	004-4	4921	87		20040409					
PRIORIT	PRIORITY APPLN. INFO.:								7	AU 20	001-8	3784	7	A 20011109			
									. 1	VO 20	002-7	AU152	22	V	v 20	0021	108

AB The invention relates to anti-viral agents which may be effective for treating, for example, respiratory infections by Respiratory Syncytial Virus (RSV). A three-dimensional structure model of the RSV-F protein has been generated and described which can be used to identify, screen, and/or develop anti-viral agents, including RSV neutralizing antibodies. The threedimensional structure model comprises, at least, the three-dimensional structure of a anti-viral target site comprising all or part of each of the following amino acids of RSV-F protein: Tyr33, Cys37, Ser38, Ala39, Val40, Ser41, Lys42, Gly43, Leu48, Arg49, Thr50, Lys315, Leu316, His317, Thr318, Ser319, Pro320, Leu321, Cys322, Thr323, Ser330, Asn331, Ile332, Cys333, Leu334, Thr335, Arg336, 20 Thr337, Asp338, Arg339, Phe352, Pro353, Gln354, Ala355, Glu356, Thr357, Cys358, Phe366, Cys367, Asp368, Thr369, Met370, Asn371, Ser372, Leu373, Lys394, Ile395, Met396, Thr397, Ser398, Lys399, Thr400, Asp401, Val402, Ser403, Ser404, Ser405, Val406, Ile407, Thr408, Ser409, Leu410, Gly411, Ala412, Ile413, Val414, Ser415, Lys419, Lys421 and Asp440. The structure model may also be used to develop RSV-binding antibodies useful for diagnostic assays.

IT 31.7846-22-3

> RL: ARG (Analytical reagent use); BSU (Biological study, unclassified); ANST (Analytical study); BIOL (Biological study); USES (Uses) (RSV-F inhibitor; method for identifying or screening anti-viral agents against respiratory syncytial virus (RSV) using three-dimensional model of RSV-F protein)

RN 317846-22-3 CAPLUS

3-Pyridinol, 2-[[2-[[1-(2-aminoethyl)-4-piperidinyl]amino]-4-methyl-1H-metbenzimidazol-1-yl]methyl]-6-methyl- (9CI) (CA INDEX NAME)

REFERENCE COUNT: THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

ANSWER 11 OF 11 CAPLUS COPYRIGHT 2007 ACS on STN ACCESSION NUMBER: 2001:12444 CAPLUS Full-text

DOCUMENT NUMBER:

134:86248

TITLE:

Preparation of benzimidazoles as respiratory syncytial

virus replication inhibitors.

INVENTOR(S): Janssens, Frans Eduard; Meersman, Kathleen Petrus

Marie-Jose; Sommen, Francois Maria; Guillemont, Jerome Emile Georges; Lacrampe, Jean Fernand Armand; Andries,

Koenraad Jozef Lodewijk Marcel

PATENT ASSIGNEE(S):

Janssen Pharmaceutica N.V., Belg.

SOURCE:

PCT Int. Appl., 119 pp.

CODEN: PIXXD2

DOCUMENT TYPE:

Patent

LANGUAGE:

English

FAMILY ACC. NUM. COUNT:

PATENT INFORMATION:

PA'	TENT	NO.			KIN	D DATE			APPLICATION NO.						DATE			
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						2000-EP5676	W	20000620
						2001-30202	A3	20011227
				•		2005-144103	A3	20050603
OTHER SOUR	RCE(S):		MARPA	T 134 - 86248				

OTHER SOURCE(S):

MARPAT 134:86248

AB Use of title compds. [I; al:a2a3:a4 = (substituted) CH:CHCH:CH, N:CHCH:CH, CH:N:CH:CH, CH:CHN:CH, CH:CHCH:N; Q = R2R4NAX1, R2R4NCOAX1, specified (heterocyclic) ring, etc.; A = alkylene; R2 = H, CHO, alkylcarbonyl, pyrrolidinyl, piperidinyl, homopiperidinyl, aminocycloalkyl, etc.; R4 = H, alkyl, aralkyl; G = bond, alkanediyl; R1 = (substituted) piperidinyl, piperazinyl, pyridyl, pyrazinyl, pyridazinyl, pyrrolyl, furyl, thienyl, oxazolyl, thiazolyl, imidazolyl, pyrazolyl, etc.] for treatment of viral infection is claimed. Thus, 1,1-dimethylethyl 4-[[1-[[3,5-dihydro-3,3-dimethyl-9-(phenylmethoxy)-1H-1,3-dioxepino[5,6-c]pyridin-2-yl]methyl]-1H-benzimidazol-2-yl]amino]-1-piperidinecarboxylate was refluxed 6 h in 10N HCl to give 4-[[1-[[3,5-dihydro-3,3-dimethyl-9-(phenylmethoxy)-1H-1,3-dioxepino[5,6-c]pyridin-2-yl]methyl]-1H-benzimidazol-2- yl]amino]piperidine. Tested I inhibited respiratory syncytial virus replication with IC50 = 0.00013-2.5119 μM.

IT 317846-21-2P 317846-23-4P 317846-24-5P 317846-25-6P 317846-41-6P 317847-12-4P 317847-13-5P 317847-17-9P

RL: BAC (Biological activity or effector, except adverse); BSU (Biological study, unclassified); SPN (Synthetic preparation); THU (Therapeutic use); BIOL (Biological study); PREP (Preparation); USES (Uses)

(preparation of benzimidazoles as respiratory syncytial virus replication inhibitors)

RN 317846-21-2 CAPLUS

CN 3-Pyridinol, 2-[[2-[[1-(2-aminoethyl)-4-piperidinyl]amino]-4-methyl-1H-benzimidazol-1-yl]methyl]-6-methyl-, tetrahydrochloride (9CI) (CA INDEX NAME)

4 HC1

RN 317846-23-4 CAPLUS

CN Butanedioic acid, compd. with 2-[[2-[[1-(2-aminoethyl)-4-piperidinyl]amino]-4-methyl-1H-benzimidazol-1-yl]methyl]-6-methyl-3-pyridinol (1:1) (9CI) (CA INDEX NAME)

CM 1

CRN 317846-22-3 CMF C22 H30 N6 O

CM 2

CRN 110-15-6 CMF C4 H6 O4

HO2C-CH2-CH2-CO2H

RN 317846-24-5 CAPLUS

CN Butanedioic acid, hydroxy-, compd. with 2-[[2-[[1-(2-aminoethyl)-4-piperidinyl]amino]-4-methyl-1H-benzimidazol-1-yl]methyl]-6-methyl-3-pyridinol (1:1) (9CI) (CA INDEX NAME)

CM 1

CRN 317846-22-3 CMF C22 H30 N6 O

CM 2

CRN 6915-15-7 CMF C4 H6 O5

RN 317846-25-6 CAPLUS

CN Formamide, N-[2-[4-[[1-[(3-hydroxy-6-methyl-2-pyridinyl)methyl]-4-methyl-1H-benzimidazol-2-yl]amino]-1-piperidinyl]ethyl]- (9CI) (CA INDEX NAME)

RN 317846-41-6 CAPLUS

CN 1-Piperidineethanol, α -(aminomethyl)-4-[[4-methyl-1-[(6-methyl-2-pyridinyl)methyl]-1H-benzimidazol-2-yl]amino]- (9CI) (CA INDEX NAME)

RN 317847-12-4 CAPLUS

CN 3-Pyridinol, 2-[[2-[[1-(2-amino-3-methylbutyl)-4-piperidinyl]amino]-4-methyl-1H-benzimidazol-1-yl]methyl]-6-methyl- (9CI) (CA INDEX NAME)

RN 317847-13-5 CAPLUS

CN 3-Pyridinol, 2-[[2-[[1-(2-aminopropyl)-4-piperidinyl]amino]-4-methyl-1H-benzimidazol-1-yl]methyl]-6-methyl-, tetrahydrochloride, trihydrate (9CI) (CA INDEX NAME)

●4 HCl

●3 H₂O

RN 317847-17-9 CAPLUS

CN 1H-Benzimidazol-2-amine, N-[1-(2-amino-3-methylbutyl)-4-piperidinyl]-4-methyl-1-[(6-methyl-2-pyridinyl)methyl]- (9CI) (CA INDEX NAME)

IT 317847-86-2

> RL: BAC (Biological activity or effector, except adverse); BSU (Biological study, unclassified); THU (Therapeutic use); BIOL (Biological study); USES

(preparation of benzimidazoles as respiratory syncytial virus replication inhibitors)

RN

317847-86-2 CAPLUS 3-Pyridinol, 2-[[2-[[1-(2-aminopropyl)-4-piperidinyl]amino]-4-methyl-1H-CN benzimidazol-1-yl]methyl]-6-methyl-, tetrahydrochloride (9CI) (CA INDEX NAME)

4 HCl

IT 317847-56-6P

> RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)

(preparation of benzimidazoles as respiratory syncytial virus replication inhibitors)

RN 317847-56-6 CAPLUS

CN 1H-Benzimidazol-2-amine, 4-methyl-1-[(6-methyl-2-pyridinyl)methyl]-N-[1-(oxiranylmethyl)-4-piperidinyl]- (9CI) (CA INDEX NAME)

THERE ARE 17 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

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(FILE 'HOME' ENTERED AT 08:36:41 ON 06 AUG 2007)

17

FILE 'REGISTRY' ENTERED AT 08:45:51 ON 06 AUG 2007 ACTIVATE B596519/A

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L3 STRUCTURE UPLOADED

L4 6 S L3 SAM SUB=L2

L5 64 S L3 FULL SUB=L2

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FULL ESTIMATED COST ENTRY SESSION 60.79 104.56

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CA SUBSCRIBER PRICE -8.58 -8.58

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.=> save temp 15 bb596519/a 'BB596519/A' IN USE

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REPLACE OLD DEFINITION? Y/(N):n

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ANSWER SET L5 HAS BEEN SAVED AS 'BBB596519/A'

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FULL ESTIMATED COST	0.90	105.46
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CA SUBSCRIBER PRICE	0.00	-8.58

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http://www.cas.org/infopolicy.html

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DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS) SINCE FILE TOTAL ENTRY SESSION

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STRUCTURE FILE UPDATES: 3 AUG 2007 HIGHEST RN 944028-34-6 DICTIONARY FILE UPDATES: 3 AUG 2007 HIGHEST RN 944028-34-6

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TSCA INFORMATION NOW CURRENT THROUGH December 2, 2006

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REGISTRY includes numerically searchable data for experimental and predicted properties as well as tags indicating availability of experimental property data in the original document. For information on property searching in REGISTRY, refer to:

http://www.cas.org/support/stngen/stndoc/properties.html

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(105-39-5/RN)

1 123-75-1/BI

(123-75-1/RN)

1 15965-57-8/BI

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TOTAL

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L10 ANSWER 1 OF 2 CAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBERS

2005:567167 CAPLUS Full-text

DOCUMENT NUMBER:

143:97363

TITLE:

Preparation of piperidine-amino-benzimidazole

derivatives as inhibitors of respiratory syncytial

virus replication

INVENTOR(S):

Bonfanti, Jean-Francois; Andries, Koenraad Jozef Lodewijk; Janssens, Frans Eduard; Sommen, Francois Maria; Guillemont, Jerome Emile Georges; Lacrampe,

Jean Fernand Armand

PATENT ASSIGNEE(S):

Tibotec Pharmaceuticals Ltd., Ire.

SOURCE:

PCT Int. Appl., 54 pp. CODEN: PIXXD2

DOCUMENT TYPE:

Patent

LANGUAGE:

English

FAMILY ACC. NUM. COUNT:

PATENT INFORMATION:

PATENT NO.	KIND DATE	APPLICATION NO.	DATE			
WO 2005058873	A1 20050630	WO 2004-EP53606	20041220			
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LK, LR, LS,	LT, LU, LV, MA,	MD, MG, MK, MN, MW, MX,	MZ, NA, NI,			
NO, NZ, OM,	PG, PH, PL, PT,	RO, RU, SC, SD, SE, SG,	SK, SL, SY,			
TJ, TM, TN,	TR, TT, TZ, UA,	UG, US, UZ, VC, VN, YU,	ZA, ZM, ZW			
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AU 2004298456	A1 20050630	AU 2004-298456	20041220			
CA 2548654	A1 20050630	CA 2004-2548654	20041220			
EP 1723136 .	A1 20061122	EP 2004-804942	20041220			
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CN 1894239	A 20070110	CN 2004-80037284	20041220			
BR 2004017668	A 20070403	BR 2004-17668	20041220			
JP 2007514715	T 20070607	JP 2006-544461	20041220			

US 2007093659 **A**1 20070426 US 2006-596519 20060615 MX 2006PA07109 20060823 Α MX 2006-PA7109 20060619 PRIORITY APPLN. INFO.: EP 2003-104802 20031218 US 2004-566835P Ρ 20040430 WO 2004-EP53606 20041220

OTHER SOURCE(S):

MARPAT 143:97363

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The title compds. I [Q = alkyl optionally substituted with CF3, cycloalkyl, AΒ hydroxy, alkoxy, etc.; G = a direct bond or (un)substituted alkanediyl; R1 = Arl or a monocyclic or bicyclic heterocycle; one of R2a and R3a = alkyl and the other one of R2a and R3a = H; in case R2a is different from hydrogen then R2b = H or alkyl, and R3b = H; in case R3a is different from hydrogen then R3b = H or alkyl, and R2b = H; t = 1-3; Ar1 = (un)substituted Ph; R5 = H, alkyl; and their prodrugs, N-oxides, addition salts, quaternary amines, metal complexes and stereochem. isomeric forms] having inhibitory activity on the replication of the respiratory syncytial virus, were prepared E.g., a multistep synthesis of II, starting from 4,5-dimethylbenzimidazol-2-one, was given. The exemplified compds. I were tested for activity against RSV (data given). The pharmaceutical composition comprising the compound is disclosed. 6

REFERENCE COUNT:

THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

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L10 ANSWER 2 OF 2 CAPLUS COPYRIGHT 2007 ACS on STN ACCESSION NUMBER: 2005:564655 CAPLUS Full-text

DOCUMENT NUMBER:

143:97374

TITLE:

Preparation of morpholine containing benzimidazoles as inhibitors of respiratory syncytial virus replication

INVENTOR(S):

Bonfanti, Jean-Francois; Andries, Koenraad Jozef Lodewijk; Fortin, Jerome Michel Claude; Muller, Philippe; Doublet, Frederic Marc Maurice; Meyer, Christophe; Willebrords, Rudy Edmond; Gevers, Tom Valerius Josepha; Timmerman, Philip Maria Martha Bern

PATENT ASSIGNEE(S):

Tibotec Pharmaceuticals Ltd., Ire.

SOURCE:

PCT Int. Appl., 144 pp.

CODEN: PIXXD2

DOCUMENT TYPE:

Patent English

LANGUAGE: FAMILY ACC. NUM. COUNT:

PATENT INFORMATION:

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WO	WO 2005058871						WO 2004-EP53620				20041220						
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		HR,	IS,	ΥU							·	,	•	•		,	,
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OTHER SO	URCE	(S):			MARI	TAS	143:9	97374									

AB The title compds. I [G = a direct bond or (un)substituted alkanediyl; R1 = Ar1 or a monocyclic or bicyclic heterocycle; Q = R7, pyrrolidinyl substituted with R7, piperidinyl substituted with R7 or homopiperidinyl substituted with R7; one of R2a and R3a = halo, optionally mono- or polysubstituted alkyl,

optionally mono- or polysubstituted alkenyl, nitro, hydroxy, etc.; and the other one of R2a and R3a = H; in case R2a is different from H atom then R2b = H, alkyl or halogen and R3b = H; in case R3a is different from H atom then R3b = H, alkyl or halogen and R2b = H; R5 = H, alkyl; Ar1 = (un)substituted Ph; R7 = alkyl substituted with heterocycle or alkyl substituted with both a radical OR8 and a heterocycle; R8 = H, alkyl, Arlalkyl; or a prodrug, N-oxide, addition salt, quaternary amine, metal complex or stereochem. isomeric form thereof] having inhibitory activity on the replication of the respiratory syncytial virus, were prepared E.g., a multi-step synthesis of II, starting from Et 3,4-diaminobenzoate, was given. The compds. I were tested for activity against RSV (data given). The pharmaceutical composition comprising the compound I is disclosed.

REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

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